NOAA Teacher at Sea
Mike Laird
Onboard NOAA Ship RAINIER
July 24 - August 13, 2005

Log 2

Day 3: Wednesday, July 27
Time: 13:00
Latitude: 55°53.3' N
Longitude: 158°58.4' W
Visibility: 10 nautical miles (nm)
Wind Direction: 235°
Wind Speed: 6 kts
Sea Wave Height: 0'
Swell Wave Height: 0'
Sea Water Temperature: 11.1° C
Sea Level Pressure: 1013.5 mb
Cloud Cover: Sky 7/8 covered, Cumulonimbus

Science and Technology Log

Operations for the day begin at 8:00 with crews of four launches assembling on the fantail for a pre-launch briefing giving final details of the day's assignments and a review of safety procedures. Each launch crew is composed of three members: an Officer in Charge (OIC) who has overall responsibility of the launch, a coxswain who is responsible for the physical operation of the launch, and a survey crew member who assists in data collection in the assigned survey area. Some crews carry a fourth member who is frequently a Teacher at Sea or other visitor on the ship.

Once the briefing is completed, each crew assembles in their launch-loading zone and boards the launch as it is lowered into the water. I have been assigned to launch RA5 (RAINIER launch 5) and will be working with Ensign Mike Stevenson (the OIC), Carl Verplank the (coxswain), and Greg King (the survey technician). Our assignment is to work in conjunction with launch RA3 to collect seafloor data in Mitrofania Bay, an area to the northwest of the RAINIER's anchor location. The area has been designated as Sheet AW. The area around Mitrofania Island has been divided into several sheet areas. Each sheet is composed of a map of the area overlaid by a set of parallel lines or tracks that the launch or ship will follow as it is recording data. During the two weeks we are working in the region, data will be collected for as many of those sheets as possible.

Having reached the target area, a "cast" must be taken before the actual scanning of the bottom can begin. The purpose of the cast is to gather information about the behavior of the water column we are working in. The waters' conductivity, temperature, and pressure will all affect the velocity of sound traveling through the column, and will be factored

into the processing of the collected data. The cast is conducted by lowering a CTD sensor, called a SEACAT, to the floor of the ocean. When the cylinder is raised back to the surface, the data is uploaded to the launch computers and we are ready to go. Launch RA5 is equipped with a Reson SeaBat 8101, a hull mounted extended echo sounder system. This system is used to record seafloor information in water depths not exceeding approximately 110 meters. This sonar system is a multi-beam system using 101 beams. Each beam is composed of pings emitted from the sounder. One beam drops vertically below the launch and fifty beams each fan out to the port and starboard sides.

To help picture this, imagine a set of right triangles below the launch. Each triangle originates with the junction of the vertical beam and seafloor where two opposed right angles are formed. The hypotenuse of each triangle is one of the fifty beams to the left or right of the vertical beam, and the seafloor forms the base of the triangle. Collectively the bases are referred to as the footprint (area covered by the sounding). This footprint increases in size as the depth of the water increases. As the size of the footprint grows, additional "noise" or interference is introduced into the sound wave pattern in those beams further from center. This less accurate data will usually be eliminated during data analysis.

We spend the day transiting the lines designated on our sheet as the sonar feeds seafloor data to the launch computers. At the end of the day, the launch nested safely back on the RAINIER, the data is downloaded from the launch to the ship. Now begins the next phase analysis and "cleaning" of the raw data. However, that is for another day!

Note: This is my understanding of the information I received. If there are errors or inaccuracies, I apologize.

Personal Log

We have been very fortunate so far – the weather has been great since we arrived in Mitrofania. Partially cloudy but lots of sun! The salmon (pinks and silvers) are constantly rolling and jumping. I tried my hand at a little salmon fishing yesterday with mixed results. I hooked two! Key word there <u>hooked</u>. I didn't land them – both shook the hook. Pretty lame, but I'll get them next time! Other crew members have tried some halibut fishing, but so for have only brought up what they call Irish Lords ("An ugly, junk fish.") The fish is unique – a tan, brown and black with bulging eyes and poisonous spines that apparently cause pain and discomfort if you are cut or poked.